



A new compact, cost-efficient concept for underwater range-gated imaging: the UTOFIA project

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A new compact, cost-efficient concept for underwater range-gated imaging: the UTOFIA project



<http://www.utofia.eu>

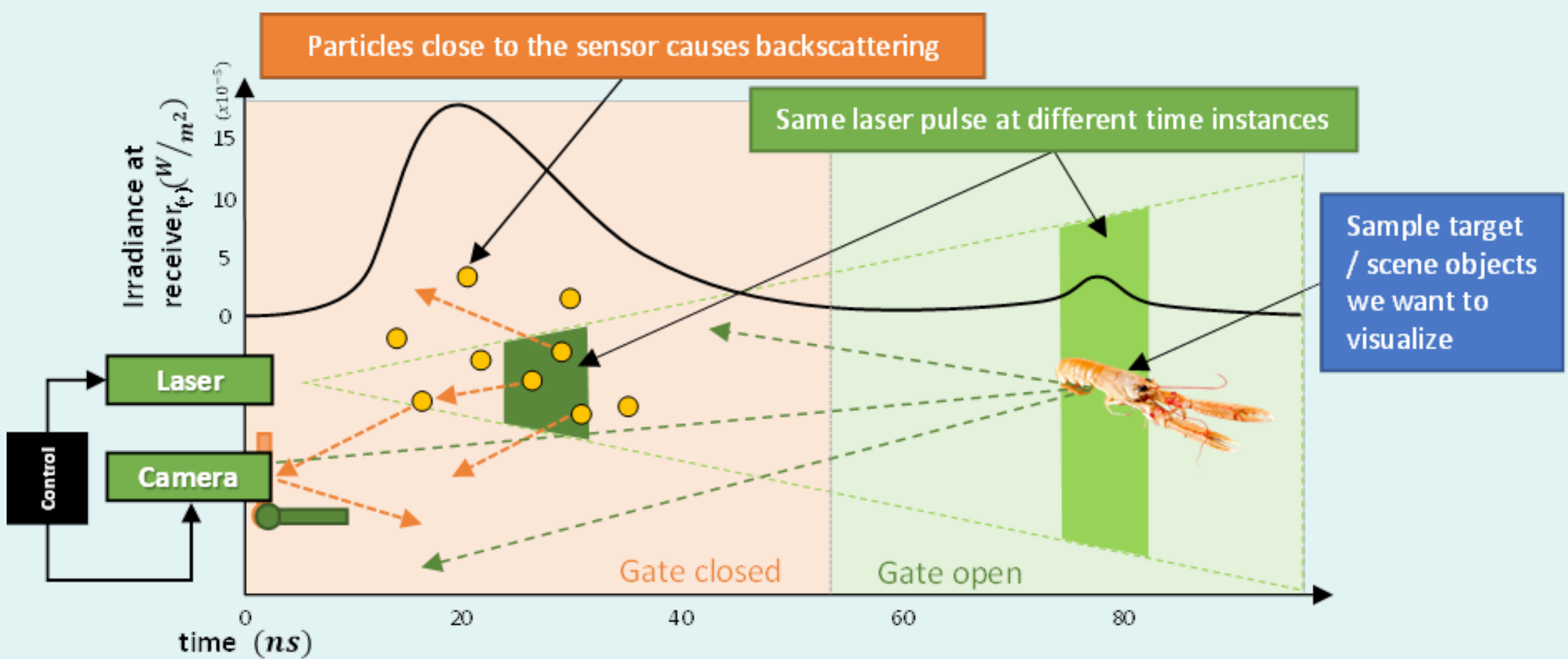
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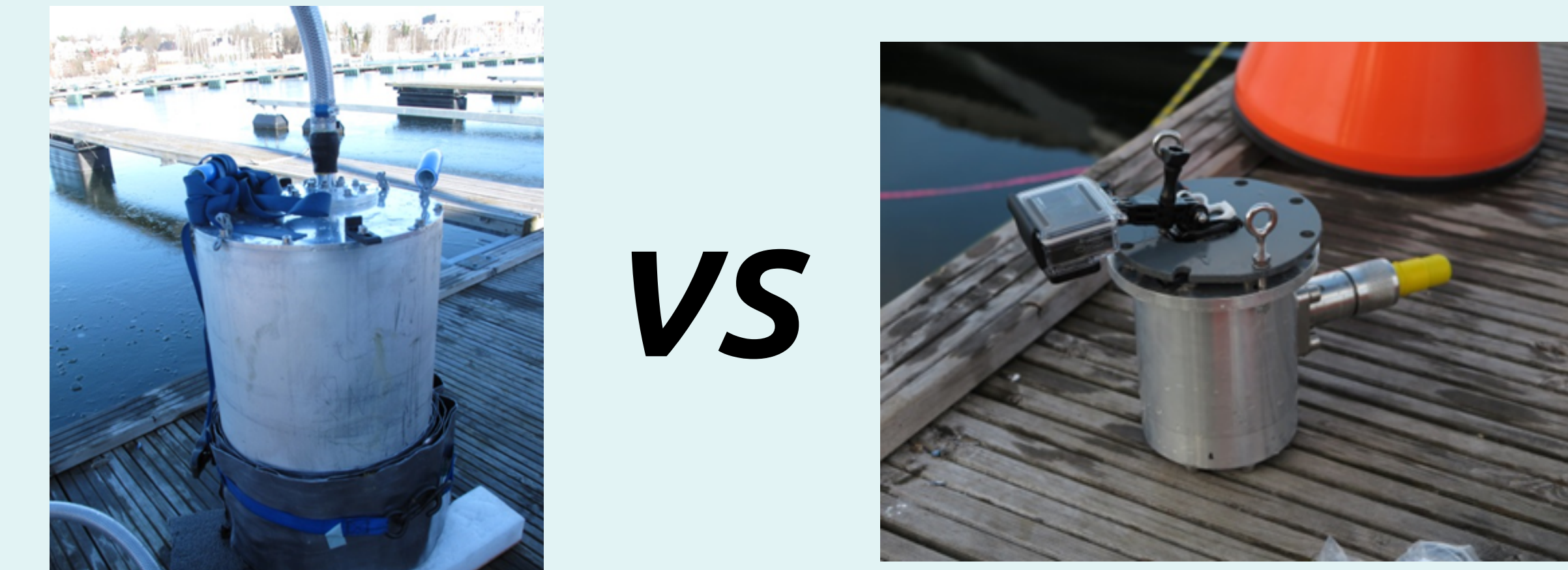
ICES CM 2015/C15

2014 The Concept

UTOFIA will develop a compact and cost-effective underwater imaging system for turbid environments. By using range-gated imaging, the system will extend the imaging range by factor 2 to 3 over conventional video systems. At the same time, the system will provide video-rate 3D information. This will fill the current gap between short-range, high-resolution conventional video and long-range low-resolution sonar systems.

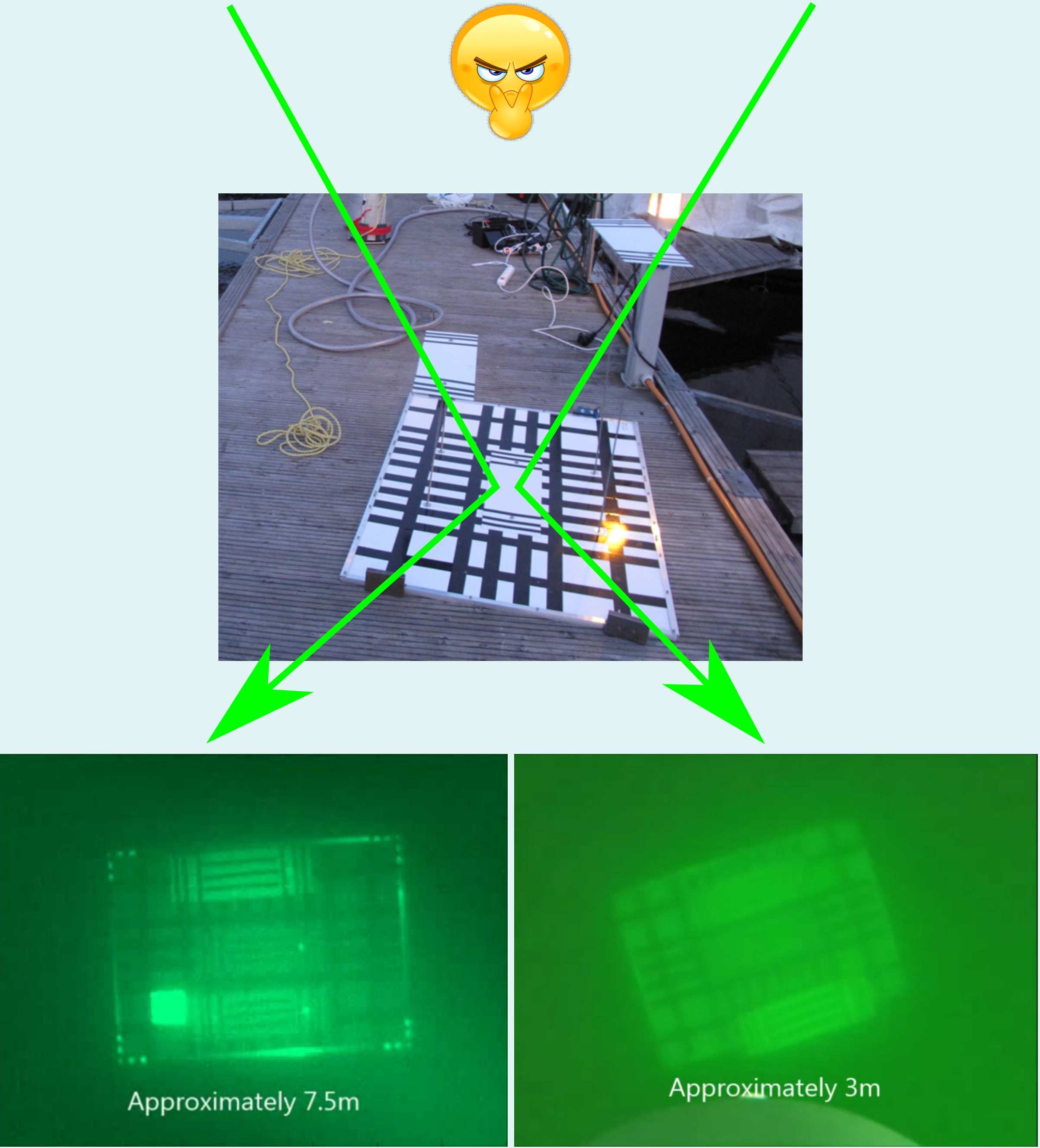


2015 Zero prototype Results

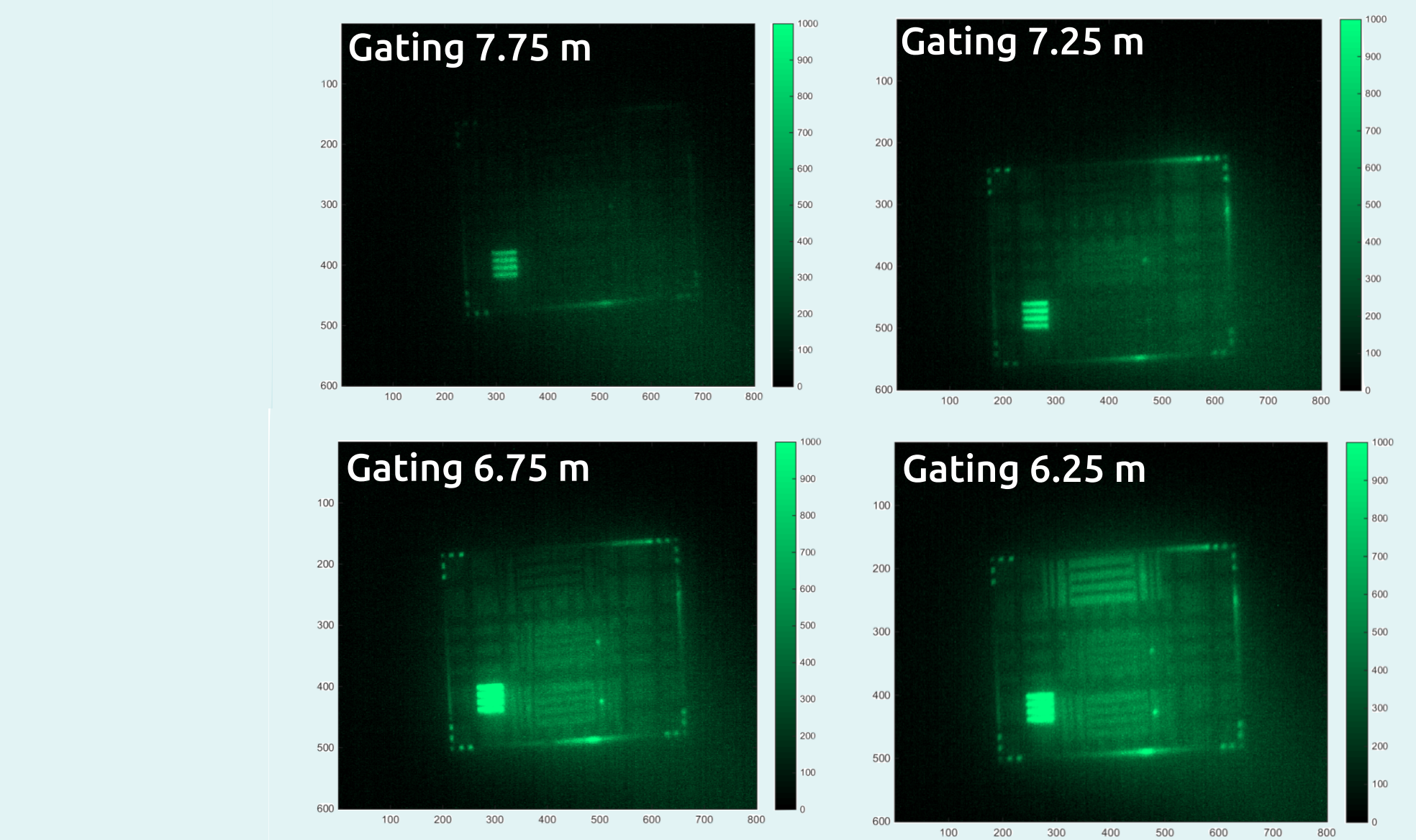


The Aspirant
UTOFIA zero

The low cost champion
GoPro 4



Back scatter reduction --> 2.5 x longer range



3D ABILITY --> the distances to and the size of an object is known.

2017 Final testing



* Benthic habitat and population mapping:
- compared with traditional sensors used for the assessment of Nephrops or sea urchin or to study seafloor habitats integrity

* Marine litter survey:
- performance assessed compared to existing technologies in variable visibility conditions (Marseille harbour)

* Pelagic fish school size and species identification
- explore the feasibility of 3D imaging for pre-screening fish schools for fisheries applications or for species and size identification in acoustic surveys (North Sea and Bay of Biscay)

2017 Final prototype Target Specifications *To be defined but smaller and more close to final product*

2016 Prototype one Target Specifications

DESIGN PARAMETER	Description
Size	200 mm outer diameter and 350 mm long
Weight	11 kg maximum
Housingmaterial	Aluminum flanges in front and back connected with a POM tube
Cooling	Active cooling of back flange by a thruster motor with a propeller
Laser volume	4.1ltr (4,6ltr)
Volume beam optics	Ø50 x 120mm
Power	24 –30 V, 4A laser, 1A camera
Connector	13pin wet mateable hybrid GigE+powerin the back flange
Wiring	8pin Ethernet,2 pin 28Volt, 1pin ground/shield.2 pin RS485
Cable	hybrid GigE, powerand signal, length 80 m (TBD) 50 -100m
Camera	Form fit and function as for System 0. Two more outputs areavailablefor the odos camera.FRG camera will be mounted on a bracket compatible with the odoscamera.
Camera lens	Fixed focus camera lens f/# < 1 Remote operated focus for camera lens
Field of view	3,5 x 3 m at 5m distance
Field of illumination	Ø 2 –2,5m at 5 m distance. (depending on diffusor)
Laser	Pulse energy: 2mJat 1kHzEye safetyclassification: 3B

End-user
feedback

